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EXAMINER

PATEL, ASHOKKUMAR B

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/653,073	Applicant(s) HLASNY, DARYL	
	Examiner Ashok B. Patel	Art Unit 2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/11/2000</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Application Number 09/653, 073 was filed on 08/21/2000. Claims 1-24 are subject to examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Referring to claims 6 and 8,

Claims 6 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: "polled recipient" and "polling at least one said recipient". The claim insists that the polling is done by the polled recipient, which is a separate entity than "at least one said recipient." For the purpose of this office action "at least one said recipient" is considered to be the same entity as that of "polled recipient."

Referring to claim 12,

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: "polled recipient" and "polling a first recipient". The claim insists that the polling is done by the polled recipient, which is a separate entity

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than "a first recipient". For the purpose of this office action "a first recipient" is considered to be the same entity as that of "polled recipient."

Referring to claims 19 and 21,

Claims 19 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: "polled recipient" and "polling a first recipient". The claim insists that the polling is done by the polled recipient which is a separate entity than "a first recipient". For the purpose of this office action "a first recipient" is considered to be the same entity as that of "polled recipient."

Referring to claim 24,

Claim 24 recites the limitation "said recipient" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless-

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1- 5, 10 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Hutchison et al. (hereinafter Hutchison)(US 6, 757, 736 B1).

Referring to claim 1,

The reference teaches a method of transferring data from a distributor to a plurality of recipients comprising the steps of:

(a) broadcasting unreceived data to said recipients (Abstract: "The present invention is an adaptive file distribution method for choosing a transmission protocol in order to optimize network and processor bandwidth according to the number of client nodes active on the data distribution network.");

(b) repeating step (a) until a time for transferring said unreceived data by point-to-point communication with said recipients obtains a predetermined relationship to a time for said broadcasting (Abstract: "specifically, a method for adaptively selecting a transport protocol for transmitting data segments across a distributed data network can include the steps of: determining the number and identity of subordinate nodes on the network that will receive the data segment; selecting a data transport protocol according to the number of subordinate nodes determined; and, transmitting the data segment to the subordinate nodes using the selected transport protocol. Significantly, the transport protocol is selected from the group consisting of a connection-oriented protocol and a connectionless protocol" and col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to

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the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection"); and,

(c) thereafter, transferring said unreceived data by point-to-point communication with at least one said recipient (col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection")

Referring to claim 2,

The reference teaches the method of claim 1 wherein the step of repeating said broadcasting of unreceived data until a time for transferring said unreceived data by point-to-point communication with said recipients obtains a predetermined relationship to a time for said broadcasting comprises the steps of:

(a) estimating a time to transfer said unreceived data by point-to-point communication with said recipients, and (b) repeating said broadcasting of unreceived data if said time to transfer said unreceived data by point-to-point communication is greater than said time to broadcast said data. (col.3, lines 48-54, "If the number of identified

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subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.3, lines 55-59, "Experimentally, it has been determined that if a file to be transmitted is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol (a point-to-point) is an optimal choice in view of the larger frame size capabilities of the TCP protocol.)

Referring to claim 3,

The reference teaches the method of claim 2 wherein the step of estimating a time to transfer said unreceived data by point-to-point communication with said recipients comprises the steps of: (a) polling at least one recipient to identify for unreceived data said recipient (col. 8, lines 18-28); (b) estimating a time to successfully transfer said unreceived data to said recipient by point to point communication; and (c) summing said estimated times to successfully transfer said unreceived data to recipients reporting unreceived data. (col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.7,

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lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determine whether the subordinate client node was an intended recipient.")

Referring to claim 4,

The reference teaches the data transfer method of claim 1 wherein the step of repeating broadcast of said unreceived data until a time for transferring said unreceived data by point-to-point communication with said recipients obtains a predetermined relationship to a time for said broadcasting comprises the steps of:

(a) estimating a time to transfer said unreceived said data by point-to-point communication with said recipients, (b) estimating remaining unreceived data following an additional broadcast of said data; and (c) rebroadcasting said unreceived data if said time to transfer said unreceived data by point-to-point communication with said recipients is greater than a sum of said time to broadcast said data and a time to transfer said remaining said unreceived data by point-to-point communication. (col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.3, lines 55-59, "Experimentally, it has been determined that if a file to be transmitted is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol (a point-to-point) is an optimal choice in view of the larger frame size capabilities of the TCP protocol.)

Referring to claim 5,

The reference teaches the method of claim 4 wherein the step of estimating a time to transfer said unreceived data by point-to-point communication with said recipients comprises the steps of: (a) polling at least one recipient to identify unreceived data for said recipient (col. 8, lines 18-28); (b) estimating a time to successfully transfer said unreceived

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data to said recipient by point to point communication; and (c) summing said estimated times to successfully transfer said unreceived data to recipients reporting unreceived data. (col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.7, lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to

determined whether the subordinate client node was an intended recipient.”)

Referring to claim 10,

The reference Hutchison teaches a method of transferring data from a data distributor to a plurality of data recipients comprising the steps of: (a) broadcasting unreceived data to said recipients (Abstract: “The present invention is an adaptive file distribution method for choosing a transmission protocol in order to optimize network and processor bandwidth according to the number of client nodes active on the data distribution network.”); (b) polling at least one said recipient to identify unreceived data (col.8, lines 18-28); (c) estimating a time for transferring said unreceived data to said plurality of recipients by point-to-point communication with said recipients; (d) repeating steps (a) through (c) until said point-to-point communication time achieves a predetermined relationship to a time required to broadcast said data; and, (f) thereafter, transferring said unreceived data by point-to-point communication with said data recipients. (col.3, lines 48-54, “If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection”, col.7, lines 65 thru col.8, line 17, “Experimentally, it has been determined that if a file to be

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transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determine whether the subordinate client node was an intended recipient.”)

Referring to claim 13,

The reference Hutchison teaches the method of claim 10 wherein the step of repeating said broadcasting of said unreceived data until said time to transfer said unreceived data by point-to-point communication with said recipients achieves a predetermined relationship to said time for said broadcasting comprises the steps of:(a) determining a time to transfer said unreceived data by point-to-point communication with each said recipient,(b) estimating remaining unreceived data to be transferred after

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an additional broadcast of said data; and(c) broadcasting said unreceived data again if said time to transfer said unreceived data by point-to-point communication with said recipients is greater than a sum of said time to broadcast said data and a time to transfer said estimated remaining unreceived data by point-to-point communication. (col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.7, lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not

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receiving the transmission are no longer required to identify the header of each transmitted packet to determine whether the subordinate client node was an intended recipient.”)

Referring to claims 14 and 15,

The reference Hutchison teaches the data transfer method of claim 10 wherein the step of repeating said broadcasting of said unreceived data until a time for transferring said unreceived data by point-to-point communication with said recipients achieves a predetermined relationship to a time for said data broadcasting comprises the steps of: (a) determining a time to transfer said unreceived data by point-to-point communication with each recipient, and (b) repeating said data broadcasting if said time to transfer said unreceived data by point-to-point communication is greater than said time to broadcast said data, and the method of claim 10 further comprising the step of transmitting said unreceived data by point-to-point communication following a predetermined number of broadcasts of said data. (Abstract and (col.3, lines 48-54, “If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection”, col.7, lines 65 thru col.8, line 17, “Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to

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four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determine whether the subordinate client node was an intended recipient.")

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 6-9, 11, 12 and 16-24 are rejected under 35 U.S.C. 103(a) as being Unpatentable over Hutchison et al. (hereinafter Hutchison)(US 6, 757, 736 B1).in view of Iwamura et al. (hereinafter Iwamura) (US 6, 396, 814).

Referring to claim 6,

The reference Hutchison teaches a method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of: (b) broadcasting unreceived data units to said recipients (Abstract) ; (e) transferring said unreceived data units to said polled recipient by point-to-point communication. (col.3, lines 52-54), (d) polling at least one said recipient to identify data units not successfully received by said polled recipient (col. 8, lines 18-28). The reference fails to teach (a) designating a representative recipient; (c) repeating step (b) until said representative acknowledges successful receipt of said plurality of data units. The reference Iwamura teaches the communication network construction method (a) designating a representative recipient (col.14, lines 32-40); and (c) repeating step (b) until said representative acknowledges successful receipt of said plurality of data units (col.14, lines 43-45). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative

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devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claims 7 and 8,

Keeping in mind the teachings of the reference Hutchison ((a) broadcasting a plurality of data units to said recipients and (b) polling at least one said recipient to establish success in receiving said data units;) as indicated above, the reference fails to teach the method step wherein the step of designating a representative recipient comprises the steps of: (c) designating as said representative said recipient having said success most representative of said success of said plurality of recipients. And (d) designating as said representative said recipient reporting said unreceived data most representative of said unreceived data reported by said polled recipients. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message.

The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 9,

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The reference Hutchison teaches the method of claim 6 further comprising the steps of: (a) a first recipient reporting success in receiving said data units from said first broadcast; and (b) another recipient reporting success in receiving said data units from another broadcast. (col.3, lines 24-54).

Referring to claim 11,

Keeping in mind the teachings of the reference Hutchison as stated above, the reference teaches method of claim 10 wherein the step of polling at least one recipient following a broadcast of said data to identify said unreceived data comprises the steps of:(a) polling a plurality of said recipients following a broadcast of said data to identify said unreceived data for each said polled recipient (col.8, lines 18-28); however, the reference fails to teach (b) identifying a representative recipient reporting said unreceived data most representative of said unreceived data reported by all polled recipients; and (c) said representative recipient reporting the identify said unreceived data on behalf of all said recipients following a subsequent broadcast. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru

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col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 12,

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The reference Hutchison teaches the method of claim 10 wherein the step of polling at least one recipient following a broadcast of said data to identify said unreceived data comprises the steps of: (a) polling a first recipient following a broadcast to identify said unreceived data for said polled recipient; (b) polling another recipient following another broadcast of said data to identify said unreceived data for said another polled recipient; (c) repeating step (b) for all polled recipients; (col.8, lines 18-28); however the reference fails to teach (d) identifying a representative recipient reporting unreceived data most representative said unreceived data reported by said polled recipients; and, (e) thereafter, said representative recipient reporting said unreceived data for said recipients following a broadcast of said data. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate

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with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 16,

The reference Hutchison teaches a method of transferring data from a data distributor to a plurality of data recipients comprising the steps of: (a) broadcasting unreceived data to said recipients; (b) polling said recipients to identify unreceived data; (col.8, lines 18-28); (c) estimating a time for transferring unreceived data to said plurality of recipients by point-to-point

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communication with each recipient; (d) rebroadcasting said data to said recipients if said estimated time to transfer said unreceived data by point-to-point communication is less than a time required to broadcast said data; and estimated time to transfer said unreceived data by point-to-point communication is less than a time required to broadcast said data; and (h) thereafter transferring said unreceived data by point-to-point communication with said data recipients. (Abstract and col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.7, lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer

subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determine whether the subordinate client node was an intended recipient.”), however, the reference fails to teach (c) identifying a representative recipient reporting unreceived data most representative of said unreceived data reported by said polled data recipients; (e) polling said representative to identify said unreceived data. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col. 14, lines 32-45, col. 13, lines 58-59, “This graph is considered to represent the status of the network at a given time point”, lines 63 thru col. 14, lines 1-50, Note: “First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for

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constructing the graph of FIG. 2.”, and “Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.”) Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 17,

The reference Hutchison teaches a method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of: (a) broadcasting a plurality of data units to said recipients; (b) polling at least one said recipient to establish success in receiving said data units; (c) comparing said success of at least two recipients; (col.8, lines 18-28). The reference also teaches (e) broadcasting data units to said recipients; (g) polling at least one said recipient to identify data units not successfully received by said recipient; and, (h) thereafter, transferring said unreceived

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data units to said recipient by point-to-point communication. (Abstract and col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.7, lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determined whether the subordinate client node was an intended recipient."), however, the reference fails to teach(d) designating as a representative said recipient having said success most

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representative of said success of said plurality of recipients; (f) repeating step (e) until said representative acknowledges successful receipt of said plurality of data units. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col.14, lines 32-45, col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device

alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 18,

The reference Hutchison teaches a method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of: (a) broadcasting said plurality of data units to said recipients; (b) a first recipient identifying unreceived data following a broadcast of said data; (c) rebroadcasting said plurality of data units to said recipients; (d) another recipient identifying unreceived data following said rebroadcast of said data; (e) comparing said unreceived data identified by said recipient and said unreceived data identified said another recipient; (h) polling at least one said recipient to identify data units not successfully received by said recipient; (col.8, lines 18-28). and, (i) thereafter, transferring said unreceived data units to said recipient by point-to-point communication. (Abstract and col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection

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with each identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.7, lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determined whether the subordinate client node was an intended recipient."), however, the reference fails to teach (f) designating as representative recipient a recipient reporting unreceived data most typical of unreceived data reported by said recipients; (g) broadcasting said data units until said representative acknowledges successful receipt of said plurality of data units. The reference Iwamura teaches the communication network construction method wherein how the

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group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col.14, lines 32-45, col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the

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device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 19,

The reference Hutchison teaches a method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of: (b) broadcasting a data unit to said recipients; (e) polling at least one said recipient to identify data units not successfully received by said polled recipient; and (f) transferring said unreceived data units to said polled recipient by point-to-point communication. (col.8, lines 18-28 and Abstract), however, the reference fails to teach (a) designating a representative recipient; (c) repeating step (b) until said representative acknowledges successful receipt of said data unit; (d) repeating steps (b) and (c) until said representative acknowledges successful receipt of said plurality of data units. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col.14, lines 32-45, col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note:

"First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 20,

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The reference Hutchison teaches the method of claim 19 wherein the step of designating a representative recipient comprises the steps of: (a) broadcasting a plurality of data units to said recipients; (b) polling at least one said recipient to establish success in receiving said data units; (col. 8, lines 18-28 and Abstract), however the reference fails to teach (c) designating as said representative said recipient having said success most representative of said success of said plurality of recipients. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col. 14, lines 32-45, col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message

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exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 21,

The reference Hutchison teaches a method of claim 19 wherein the step of designating a representative recipient comprises the steps of: (a) broadcasting a plurality of data units to said recipients; (b) polling a first recipient following a broadcast of said data to identify unreceived data for said polled recipient; (c) repeating steps (a) and (b) for a plurality of recipients (col.8, lines 18-28); however, the reference fails to teach (d) designating as said representative said recipient reporting said unreceived data most representative of said unreceived data reported by said polled recipients. The reference Iwamura teaches the communication network

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construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col.14, lines 32-45, col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the

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device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 22,

The reference Hutchison teaches the method of claim 19 further comprising the steps of: (a) a first recipient reporting success in receiving said data units from said first broadcast; and (b) another recipient reporting success in receiving said data units from another broadcast. (col.8, lines 18-28)

Referring to claim 23,

The reference Hutchison teaches a method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of: (a) broadcasting a plurality of data units to said recipients; (b) polling at least one said recipient to establish success in receiving said data units; (d) broadcasting a data unit to said recipients; (g) polling at least one said recipient to identify data units not successfully received by said recipient (col.8, lines 18-28); and, (h) thereafter, transferring said unreceived data units to said recipient by point-to-point communication. (Abstract and col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each

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identified subordinate node can be established. Furthermore, the updated file can be transmitting to each identified subordinate node using the point-to-point connection", col.7, lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determined whether the subordinate client node was an intended recipient."), however, the reference fails to teach (c) designating as a representative said polled recipient having said success most representative of said success of said plurality of recipients; (e) repeating step (d) until said representative acknowledges successful receipt of said data unit; (f) repeating steps (d) and (e) until said representative acknowledges successful receipt of said plurality of data

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units. The reference Iwamura teaches the communication network construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col.14, lines 32-45, col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other

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broadcasting device. The representative devices not only reduce the device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.

Referring to claim 24,

The reference Hutchison teaches a method of transferring a plurality of data units from a distributor to a plurality of recipients comprising the steps of: (a) broadcasting said plurality of data units to said recipients; (b) identification of unreceived data by a first recipient following said broadcast of said data; (c) rebroadcasting said plurality of data units to said recipients; (d) identification of unreceived data by another recipient following said rebroadcast of said data; (e) comparing said unreceived data identified by said recipient and unreceived data identified by said another recipient (col.8, lines 18-28). The reference also teaches (i) polling at least one said recipient to identify data units not successfully received by said recipient; and, (j) thereafter, transferring unreceived data units to said recipient by point-to-point communication. (Abstract and col.3, lines 48-54, "If the number of identified subordinate nodes exceeds a threshold number, the updated file can be broadcast to the identified subordinate nodes. Otherwise, a point-to-point connection with each identified subordinate node can be established. Furthermore, the updated

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file can be transmitting to each identified subordinate node using the point-to-point connection", col.7, lines 65 thru col.8, line 17, "Experimentally, it has been determined that if a file to be transmitted, is to be transmitted to four or fewer subordinate client nodes, a connection-oriented protocol is an optimal choice in view of the larger frame size capabilities of the TCP protocol. Specifically, when transmitting a 5 MB file from the primary distributor to four or fewer subordinate client nodes, using TCP rather than UDP resulted in a 33% performance improvement. Moreover, in using TCP, fewer data segments are transmitted across the distributed data network because TCP is a connection-oriented, point-to-point protocol as opposed to UDP which is a broadcast, connectionless protocol. Finally, in choosing TCP over UDP for transmitting a 5 MB file to four or fewer subordinate client nodes, the use of processor resources on each subordinate client node is minimized in that subordinate client nodes not receiving the transmission are no longer required to identify the header of each transmitted packet to determined whether the subordinate client node was an intended recipient."), however, the reference fails to teach (f) designating as representative recipient a recipient reporting unreceived data most typical of unreceived data reported by all recipients; (g) broadcasting a data unit until said representative acknowledges successful receipt of said of data unit; (h) repeating step (g) until said representative acknowledges successful receipt of said plurality of said data units. The reference Iwamura teaches the communication network

construction method wherein how the group is formed and how a representative is selected, what communication capabilities the grouped devices have and the group representative has, thereby it teaches the claimed elements in the context of the broadcasting. (col.14, lines 32-45, col. 13, lines 58-59, "This graph is considered to represent the status of the network at a given time point", lines 63 thru col. 14, lines 1-50, Note: "First, in order to produce the graph of FIG. 2, each device broadcasts a device message. The device message includes the information on the device broadcasting it and the information on the communicable devices determined taking the device messages from other devices into consideration. Each device judges whether it can or cannot communicate with other devices by receiving a device message from them. Further, the information on the communicable devices thus identified is broadcast with a device message, upon receipt of which each device can collect the data required for constructing the graph of FIG. 2.", and "Similarly, the device message exchanged in each group is the one relating to the devices belonging to the particular group.") Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance the teachings of Hutchison by the capabilities of the representative device of Iwamura such that the representative device alone will have to communicate with the devices in the group as well as the other representative devices in the network such as any other broadcasting device. The representative devices not only reduce the

device messages providing the configuration management information but also, in the handshake between the devices of different groups, have the function to consolidate the response messages and to prevent the increase in the number of messages that a device is required to receive at a time, as explained by Iwamura.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok B. Patel whose telephone number is (703) 305-2655. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A Follansbee can be reached on (703) 305-8498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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